DATA PROCESSING DIGEST

A SERVICE OF CANNING SISSON AND ASSOCIATES

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General Information

"The Introduction of an Electronic Computer in a Large Insurance Company"

Studies of Automatic Technology No. 2, Bureau of Labor Statistics, U. S. Dept. of Labor, October 1955.

This pamphlet is a rather detailed study of the planning stages of a computer installation of one of the country's large insurance companies. The study is illustrative rather than representative of the industry, but gives factual information which should be of value to organizations other than insurance in setting up their own study programs. The first area chosen by this company for use of its electronic computer system was in the Classification Section of Division X, which prepared business operating statistics from data on 850,000 policies. It employed 198 people in this activity, rented 125 punch card machines at a yearly rental of $235,000, and used 3¼ million cards per month. The average annual salary for these employees was $3700, and frequent overtime was necessary.

After the computer was installed, it was found that 71 reels of magnetic tape could contain the information formerly contained in 850,000 punch cards. The number of punch card machines was reduced to 21 at a yearly rental of $19,000. In addition six auxiliary machines are required. The number of people needed in the Classification Section was reduced from 198 to 85, 20 of these being directly connected with the computer installation. The average salary of these 85 people is $4200. The installation freed 15,000 square feet of space for other use.

The 20 people for the computer installation were selected on the basis of experience, proficiency in mathematics, and college training (desirable but not essential). Nine were retained from the original Classification Section, five were selected from other sections of Division X, five from other Company Divisions, and one (an electronic engineer) was hired from the computer manufacturer.

Those persons who were to be released from the Classification Section were absorbed gradually into other company positions after interviews during which they indicated their job preferences. All received the same or better pay.

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Four of the six supervisors were retained in the computer group, the others were transferred.

The Computer Work Force is composed of nine clerks, four operators, four equipment and control people, one engineer–supervisor, one key punch operator and one librarian. Two of the operators are on a second shift.

A Procedure Development Group of four people will develop new procedures for the electronic equipment. In addition, the Electronic Installation Division of 60 people skilled or showing aptitude in programming, project analysis and other logical processes, is engaged in a 3–year program of analysis and study of every Division for possible use of computers to make cost savings or reduce the effects of the labor shortage.

The Company anticipates that the computer installation in the Classification Section will effect a 50% saving in the section's budget. This amounts to about a 9% saving for the Division as a whole. Although the Company expected the computer to have a 5–year write–off period, it now expects the cost to be written off in four years.

The pamphlet may be obtained by writing the Bureau of Labor Statistics, Department of Labor, Washington 25, D. C.

"Electronic data processing and the controller"

Richard G. Canning, Canning, Sisson and Assoc., Los Angeles
THE CONTROLLER, April 1956; pages 158–160, 190, 191.

Central files and unified reports can aid management control

Two of the characteristics of present data–processing methods are the necessity for separate files (for example, identical inventory information filed in the accounting and the production control departments), and for the handling of only one operation at a time by clerks. These are characteristics of punch card systems as well as of manual systems. The result is loss of control. The so–called "practical" electronic programs (converting present systems to electronic methods) offer little for improving management control. "...They should be recognized for what they are––cost reduction solutions, not improved-control solutions." Integrated data processing (IDP) is included in this cost reduction category, inasmuch as it is concerned primarily with facilitating the flow of information to the present type of fractured file maintenance. Nor does the converting of present punch card methods to the electronic systems aid in the matter of control, even though the more rapid processing can effect some economies. Since the system plans still follow those of the manual or punch card systems, the fractured files and operations remain, and the manual and punch card limitations are carried over into the electronic system.

An example of an inventory control operation in a department store is given to show how a central computer file can serve many purposes. Punched tags from the merchandise are collected and put into the reader at the data–processing center, where the information is recorded on magnetic tape. It is then sorted into stock number sequence. Then the stock number tape and the

master inventory tapes are connected to the processing machine, and the master inventory tape is up–dated with the information contained on the stock tape. Information from the tape is printed out for the buyers' attention. Thus the processor can perform analysis for physical control. But it can also make financial checks at the same time, such as dollar rate–of–return on an item; dollar valuation of inventory, by item and in total; dollar valuation of open purchase orders, and cash position of store required in order to pay for item; and many others.

"Because of the electronic system's speed, and ability to handle alternative complex procedures, it becomes practical to combine physical and financial files....exceptions, physical or financial can come out on the same report to management and will allow for more efficient action to be taken." While some of the exceptions may be routine and can be handled by the controller's staff under existing procedures, others will be unusual enough to warrant analysis and decision by the controller, for setting up new policies and procedures.

In setting up the new system, the controller will have to answer such questions as: "How do we really want to control our business? How much is speed of control worth in our firm?" and "How can we satisfy the auditors as to the validity of our records, without having all our files printed out periodically? Can we and the auditors agree on new auditing procedures which accomplish the same objectives but do not require the present type of paper records?" He will have to answer administrative questions: "What controls do we set up in the computer itself, so that some operator does not absent-mindedly put the wrong tape on the machine and thus destroy important records? How do we prevent a not–so–sharp operator from 'correcting' a program 'error' in the machine, thus causing all remaining records to be processed incorrectly––and with no written evidence of the change made by the operator?"

Proof that this approach is practical is the fact that a western life insurance company has put its ordinary life insurance operation on a computer, and has consolidated 14 files into one file. The equipment is available. It's up to the controller to plan how to use electronics for more effective management control.

"Automation spurs the changing office"

Howard S. Levin, Ebasco Services Inc., New York
AUTOMATION, April 1956; pages 68–72.

New approaches to old problems

Technological tools are now available for the three major aspects of information handling; for initial handling, common language equipment; for information processing, electronic computers; and for information using, operations research.

"The combination of common language machines, electronic computers and operations research offers a new dimension to the executive willing to investigate new approaches to old problems. Through such approaches a

business will be able to adapt itself to changing conditions in a way most favorable to the business. This ability comes from using information as a management tool."

Increased control through information feedback and model construction are two of the advantages to management of the new methods. However, such methods will cause some changes in administrative concepts and work patterns, and "many groups are concerned over the effects these developments may have on our labor force and economy....Replacement of workers by the technology of information handling is a problem that deserves our most serious consideration....It is the writer's conviction that application of new tools for office work will be a major factor in bettering the economic lot of all [and that] ...the further growth of automation is an inevitable consequence of our technological progress, but we should not forget that the best efforts of business, labor, and government will be needed to make that inevitability a force for the greatest good."

"Office Work and Automation"

Howard S. Levin, Ebasco Services, Inc.
New book, published by John Wiley and Sons, Inc. Price: $4.50.

The office: a medium of data–handling for management

Electronic data processing, for all its basis in logical and "good" business systems, is still a new and complex subject. Too much of the material written and spoken about EDP has been in the vernacular of the "professional man," be he electronic engineer, systems analyst or management specialist. It is not easy to write a primer on *any* subject; on the subject of electronic data processing, it has appeared to be impossible.

Here, however, is an introductory text that does the job exceedingly well. Perhaps it is Mr. Levin's mathematics background that gives his writing such clarity, such logical organization. The book shows evidence of thoughtful, detailed outlining. Even the format of the contents reveals the kind of logical structure upon which every good teacher builds his subject matter. The book is divided into five parts: New tools for the office, A common language, Electrons for the office, The businessman and the scientist, and A changing office. Thus he begins by defining the purposes and extent of office work, shows how the various needs for information can be integrated throughout the business organization, provides for these needs on the level of highspeed automatic processing, raises the quality of information processing to serve management decision–making, and finally re–tailors the office organization to serve its new function as a data handling instrument.

"In this book," Mr. Levin writes, "the office will not be limited by physical boundaries. It will exist wherever information is collected, processed, or used in the administration of business affairs." Persons who are viewing EDP merely as a quicker way of getting through their present office routines will be disappointed. But those who are willing to sweep away the barriers that exist between their office departments, and who can visualize and define the goals

of their organization, will find Mr. Levin's approach a stimulant to their creative thinking.

This book is recommended for those just beginning to investigate the field. It will help them to see where they are going. On the other hand, it will also be of interest to those who are now successfully launched on an EDP program. It will delight them to see whence they have come.

"Qualifications for supervision of an electronic office"

Dr. John W. Carr III, University of Michigan
OFFICE, April, 1955; pages 14, 17, 18, 20–23.

High quality of management

The supervisor of an electronic information system must have the ability "to organize a sequence of control of information," and "to work with and understand machines so that a theoretically satisfactory system will actually work." He must be familiar with the problems being performed by the system, and he must be considered "an integral part of the managerial sequence of control."

At least two new managerial techniques are required. These are "the use of many different and varied languages to describe a problem exactly" (flow diagrams, symbolic program steps, machine code, natural language, logic), and "an understanding of *automaticity*." The latter term is defined as "the ability of an information machine to perform its functions without the need for human intervention," and the less communication necessary between the machine and the humans operating it, the more efficient is the system. "The need is for good auditors, good accountants or good managers who have a background in the new mathematics and logic that is required to understand our new, automatic clerical workers....It is not the responsibility of our universities to...turn out computer coders...but instead to develop new abilities and engender understanding of the fundamentals that will be needed to guide the mixed machine civilization of tomorrow."

"Accounting looks ahead"

MODERN RAILROADS, May 1956; pages 120–122, 126.

Full–time systems research

Great Northern Railroad maintains four different inter–departmental committees which are charged with the responsibility of improving information–handling and management reporting. A full–time Computer Research Committee under the direction of the Vice President, Controller and General Auditor, is assisted by an advisory committee representing all departments. A Research and Methods Committee set up specifically for auditing problems, and a Stationery and Efficiency Committee which surveys inter–departmental systems, complete the quartet. They view their jobs as portions of a continuous effort to improve methods of information handling. A Univac to be delivered in mid–1956 is the focal point of all systems improvements.

"Electronic Devices"

F. Clive de Paula

"The high–speed computer"

T. R. Thompson, LEO Computers Ltd.

THE ACCOUNTANT, March 24, 1956.

Overall planning advised for English businessmen

These two articles reveal an English viewpoint of computer preparation and application in business which is very similar to that of most U. S. businesses which have utilized electronics. For example, quoting from the first article, "...we must re–think what we are really trying to do in keeping accounting records....we must think very clearly what information is really needed by management to assist them in the day–to–day running of their business." The author believes that "computers controlling the processing of accounting data ...should be viewed as enabling us to integrate our whole accounting and recording process into one fast–moving whole."

Six essentials are given in the second article for a satisfactory application of electronic equipment: "Start with a job and see if there is a computer that will do it; get the true requirements of the job down completely and precisely in their simplest terms; prepare an effective plan for the job; make sure it will be economical and effective before going on to the computer; get the job coded in a practical manner; and get the cooperation of the operating department to perform the job properly."

"Preparing for electronics"

Robert D. Armstrong, Canadian National Railways
OFFICE EXECUTIVE, May 1956, pages 27–29.

Union explains plan to employees

The plan Canadian National Railways followed in preparing for an electronic business system is similar to other companies which have mechanized conventional systems gradually, through the punched card stage and hence to electronics. A unique method of communicating the plan to their employees was that of informing the union, and getting their cooperation in an educational campaign through the union's own channels of communication.

"Computers and accounting systems; a bibliography"

Robert H. Gregory, M. I. T.
ACCOUNTING REVIEW, April 1956; pages 278–285.

Books, articles on electronic systems

This bibliography was selected from one prepared for a course offered in M.I.T.'s school of Industrial Management on "Management Information Systems." It is divided into three sections: A. Equipment design and construction; B. System investigation and equipment application; C. System analysis, appraisal, and revision. Each of these sections contains a list of books, followed by a list of articles on the subject. The list contains most of the "classics" of the field, and is complete through 1955.

"Electronics in financial accounting"

B. J. Bennett, K. R. Eldredge, T. H. Morrin, J. D. Noe, O. W. Whitby, Stanford Research Institute
Paper presented at Eastern Joint Computer Conference, 1955.

Automatic check processing

This paper presents some of the problems confronting banks in designing systems for automatically handling checks. It discusses the points which were considered in the design and engineering of Bank of America's ERMA, and concludes with a description of the equipment and its operation. A copy of this paper may be obtained from the Public Relations Department, Stanford Research Institute, Menlo Park, California.

"Can computers cut your costs?"

Ned Chapin, Illinois Institute of Technology
AUTOMATION, March 1956; pages 45–51.

Cost analysis

The author shows, how, through careful systems analysis, and the use of the MAPI formula ((for figuring the cost of obsolescence)), a company can determine the profitability of installing a computer. This article is similar in content to his other articles listed in Data Processing Digest--January 1956, pages 11 and 13, December 1955, page 8.

"Proceedings of the 1955 Electronic Business Systems Conference"

Published by the Western Region of the National Machine Accountants Association

Conference papers

Eleven papers are included in this publication of 76 pages. Order from Eugene I. Sheehan, Warner Brothers Pictures, Inc., 4000 Warner Blvd., Burbank, Calif. Price, $3.00.

"Machine Translation of Languages"

Edited by William N. Locke and A. Donald Booth
New book, published by The Technology Press and John Wiley & Sons

A new field significant to business, science, the arts

A fascinating field in which a number of scholars, scientists, and engineers are working quietly here and abroad, is mechanical translation. M.I.T. has been particularly active, and issues a periodical, MECHANICAL TRANSLATION, which reports on the progress of their investigations.

This book is a collection of 14 essays on the subject, written by the foremost men in the field. While mechanical translation is not at the present time a practical reality, it is evident that the field impinges on that of business data processing, and has some interesting implications for international commerce. This highly readable book will be an excellent means to understanding the problems and the possibilities, as well as the progress being made in this new field. ((Price: $6.00))

"Workshop for Management"

Proceedings of the 8th Annual Systems Meeting, Systems and Procedures Association of America. Published by Management Publishing Corp., 1956. Price: $19.00.

Electronics and operations research

As with last year's volume, this contains the substance of the seminars and talks at the Annual Systems Meeting. Although more than half of the contents have to do with subjects other than electronic systems, there are a number of papers on this subject, as well as on operations research which make the volume well worth obtaining. Included are seminars on making an electronics survey, a survey of equipment, application of electronics to production planning and material control, application of electronics to billing and accounting, integrated data processing, and operations research. Papers are presented on training personnel for electronic installations, a discussion of the Chrysler Parts Division computer study, a description of the Univac system installed at Metropolitan Life Insurance, and an introductory talk on operations research.

"Housing a computer"

RAILWAY AGE, April 30, 1956, page 42

Early planning advised

The Southern Railroad will spend about $110,000 preparing a site for its IBM 705. Some of the major factors to consider are: space requirements, power requirements, air conditioning, acoustics, and lighting. The Southern believes planning for space and housing requirements should begin 12 months before delivery date. Ten months should be allowed for construction.

"Effects of automation equipment on office layout design"

Kenneth H. Ripnen, New York
AMERICAN BUSINESS, April 1956, pages 17, 40, 41.

Planning for installation

Consideration of the requirements of electronic equipment should be made in the earliest stages of office and plant design. These include space, weight and stress for flooring requirements, under–floor ducts for wiring, acoustics, room temperature, air conditioning, increased power needs, and the way in which some of these requirements might affect the comfort of employees in surrounding areas.

COMPUTING NEWS

(A semi-monthly newsletter of information on punched card machines and calculators)

Equipment and methods

Now in Volume 4, this short (average 10 pages) newsletter contains chatty news items and technical programming information on electronic computers, card calculators, numerical analysis, and related subjects. One year subscription: $6.00. Write: Fred Gruenberger, Editor, Box 885, Richland, Washington.

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Equipment

"Data processing with a quasi–random–access memory"

Gerhard L. Hollander, Clevite Research Center
INSTRUMENTS AND AUTOMATION, April 1956; pages 690–694.

TapeDRUM plus buffer for random access

The TapeDRUM combines the large storage capacity of magnetic tape with the fast access time of the magnetic drum. This article describes the operation and capacity of the TapeDRUM, which was designed and produced by the Clevite Corporation. A method for rapidly handling random inputs is described, using a savings bank operation as an example. This method is called Quasi–Random Access, and uses a conventional magnetic drum as a buffer storage medium. This stores successive transactions at a rate exceeding the TapeDRUM's limit and holds them until the TapeDRUM has moved sequentially to the proper position for each transaction being stored. This system is useful only when information flows into the system rapidly, but where there is no need to obtain an output more rapidly than the random access rate of the TapeDRUM (which can take as long as two minutes). In the savings bank example used here, rapid access to a customer's balance can be obtained by storing the balances in both the buffer and the TapeDRUM, updating both balances on each transaction.

"Automation in banking"

UNITED STATES INVESTOR, April 7, 1956; pages 43–60.

Resume of progress

This is a report to the banking industry of progress being made in electronic data processing in banking operations. Ten additional short articles are included, each on a different type of equipment adaptable or specifically designed for banking purposes. Included are ERMA, NCR's new Post–Tronic, Chase–Manhattan's DIANA, and others.

The national Post–Tronic is used in preparing checking account statements which are conventional except for a special coating on the back on which the balance at the end of a run is recorded in magnetic spots. This information is picked up at the beginning of the next run by the machine, eliminating the possibility of error in entering the old balance. The Post–Tronic also verifies that the operator has selected the proper depositor's statement for posting, verifies the number of checks that have been written against the account, and aligns the statement being posted to the next proper posting line. If an account becomes overdrawn the machine notifies the operator at once.

Another National banking machine is the window posting machine modified for use with paper tape recorders. This device is used in savings transactions to record on the paper tape whatever is entered into the keyboard. The tape can be processed by the bank's computer to post the transaction to the customer's account, eliminating the necessity for hand posting to the ledger card at the window. This saves both time and storage space at the tellers' windows, and the records can be processed at the bank's convenience. Interest can also be computed and posted automatically from this source.

DIANA is a random–access (magnetic drum) memory computer which will be installed by Chase Manhattan Bank this year. The system is designed by Laboratory for Electronics of Boston, and will cost between $150,000 and $400,000. Stored records may be called for at random and may be displayed on the face of a television-like tube, typed out, printed on standard tabulators, punched on paper tape or cards, or recorded on magnetic tape.

A smaller computer, TIM, also produced by Laboratory for Electronics, is priced in the range of $30,000–$60,000. This machine has up to 200 digits of high–speed magnetic core storage, and 720,000 decimal digits in drum file unit. Input is by direct keyboard or punched paper tape. Output is by adding machine printer and punched paper tape. Punched cards and merchandise tags may be read automatically. Basic records are stored on the file drum unit, each record being identified by a number, and containing up to 100 digits. The programs are also stored on the drum.

"Office Automation"

Newsletters No. 6 and 7 and Revision sheets
Automation Consultant, Inc.

Up–dating service

Information in No. 6 includes the Dashew Databosser, the DATAmatic 1000 Computer (Minneapolis-Honeywell, Raytheon), and the Underwood Servotyper.

No. 7 includes information on the following:

The Flexowriter Duplex uses two tapes, one with the date and body of the document, and the other with the mailing list or other identification. Thus an entire personalized mailing, or invoices, orders, etc. may be handled by the Flexowriter without attention by the operator.

The IBM Electrostatic Card Printer reproduces printed information from one set of IBM cards to another at the rate of 200 cards per minute. Applications are maintenance of meter records and invoice addressing in the utilities field; premium notices; mass addressing of promotional or subscription literature; government uses such as printing of pension checks.

Further information about paper–tape coupled National accounting machines and cash registers is included in this supplement.

"Electronic computers for the smaller office"

Eugene J. Benge, management engineer, Benge Associates, Asheville, N.C.
THE OFFICE, March 1956; pages 69–77.

Low price field

Some tables are given showing characteristics of a number of models of calculating punches, numeric computers, and alpha numeric computers in the low priced field.

Programming

"Tape identification and rerun procedures for tape data processing systems"

Leonard Eallson, Remington Rand Univac, New York
COMPUTERS AND AUTOMATION, April 1956; pages 12, 13.

"Memory dump" can help locate errors

The high costs involved in operating a data processing system make accuracy and efficiency in detecting errors imperative. Errors may be caused either by equipment failure, or failure of personnel to follow procedures properly. Tape reels may be improperly identified; or, when errors are revealed during processing, the operator may attempt to correct the errors in a way which compounds them. Another possibility for interruption in the data processing run besides pause for error correction, is the need to place a higher priority or special problem on the computer.

All of these cases necessitate a re–run procedure and a tape identification system, in order to restart problems. It is necessary that each tape reel be started with a block of identifying information which duplicates the information on the tape label. In addition, the total number of blocks recorded on the tape should be recorded at the end. On subsequent runs, the blocks are counted during read–in, and compared with the total recorded at the end. If the totals do not match, the tape is re–run. This checks on the accuracy with which the manual operations during a run were executed. It is also suggested that each tape be concluded with a recording of the memory contents. This will include the identification of the various tapes used during the run, as well as the block counts of each tape. When an error is detected, the last tape produced is placed on the tape mechanism, and the "memory dump" at the end of the tape is printed out. The operator can use this information to find his way back through his procedure and thus locate the error.

((This is a very sketchy resume of the article. It is suggested that programmers get a copy of the article to include with their file of programming materials.))

"Job shops"

BUSINESS WEEK, May 5, 1956, pages 188, 189.

Scheduling program

IBM has devised a production–scheduling system called "Optimum Production Scheduling and Loading" for its 650, and is testing it out on a rigorous schedule in its Endicott plant.

"An automatic method of optimum programming for the IBM 650"

Elmer F. Shepherd, John Hancock Life Insurance Co.
JOURNAL OF MACHINE ACCOUNTING, February 1956; pages 13, 14.

Minimum access time

Optimum programming is defined as assigning drum locations in such manner as to minimize access time. In this article a method is given of automatically selecting the "best" location for minimum access.

"A new concept of programming"

S. E. Wirt
JOURNAL OF MACHINE ACCOUNTING, February 1956; pages 14, 32.

Automatic programming

An extremely simplified explanation of automatic programming is given—of value to persons who have no training or professional interest in programming.

Management Decision-making Techniques

"Computers as tools for management"

John S. Coleman, Burroughs Corporation
MANAGEMENT SCIENCE, January 1956; pages 107–113.

Some problems to be solved in management science progress

A more important use for electronic computers than the speeding up of data processing, is their use in scientific management: 1) "as an analytic tool based on operations research"; 2) "as a system control tool bearing on production, inventory and the related phases of industrial operations"; and 3) in the various government agencies, primarily in the Department of Defense.

Although the military research programs have thus far taken the lead, industry can help advance the science rapidly if it develops research programs on a widespread basis.

The rate of progress will be governed by the solving of a number of problems. First, business management is complex, and careful research is necessary "in order to determine the proper scope of the targets for application of scientific methods and corresponding use of computers." After the areas (or targets) for study are established, the problems in these areas will be found to be more complex than purely technical systems such as industrial process control. Another problem lies in the necessity of making decisions based on the uncertainties of predictions.

Thus, the approach must be "a systematic method of determining possible outcomes, the relative probabilities of these outcomes, and methods for basing decisions on the probabilities." Furthermore, "we have the problem of determining whether any proposed scientific approach is actually superior to management decision on the basis of experience and intuition." Confidence in the scientific method will have to be taught management through patient explanation and sympathetic understanding of management's problems.

"Management <u>can</u> understand Operations Research"

MANAGEMENT METHODS, May 1956; 18–22.

Linear programming

In question and answer technique, a simple explanation is given of one of the techniques of operations research——Linear Programming.

"Management implications of scientific computer applications and programming"

G. F. Cramer, Remington Rand
Handbook, Electronics at Work, AMA Conference, 1956

Business problems with scientific vein

It is suggested that executives consider some of the scientific applications of computers as an aid to scientific management methods such as simulated trials and rules of procedure based upon mathematical theories. It is also suggested that commercial applications of the "on line" or "real time" type can be performed by scientific computers, in which automatic commands are issued on the basis of the results, which in turn control the entire process. Certain of these processes which are repeated frequently can be made into sub-routines, and compiled automatically as needed.

"Teaming computers and OR"

FACTORY, April 1956; pages 68–71.

OR service department

General Foods uses an operations research team, outside consultants, and a computing service center to solve problems such as shipping schedules, analysis of the cost of raw materials and their availability, selection of the best location for plants, replacement policy for the company's auto fleet, prices for finished goods. ((A picture story.))

"Queueing theory in organization design"

D. G. Malcolm, Johns Hopkins University
THE JOURNAL OF INDUSTRIAL ENGINEERING, November-December, 1955; pages 19-26.

Test crew assignments

This article is an analysis and case history of the problems of assigning engine test crews to a large number of test stands. The analysis confirms the result of three years of experience: that one centrally directed group of test operators is more efficient than a number of independent crews. Large savings are postulated if this result had been applied from the start.

"On a congestion problem in an aircraft factory"

George Brigham, Boeing Airplane Co.
JOURNAL of the Operations Research Society of America, November 1955; pages 412-428.

Waiting line

A detailed investigation is given of optimum number of clerks to a station at tool cribs. The cost of the operation is analyzed under conditions where the clerks can do useful work when not waiting on mechanics (by analyzing the waiting line formed by the clerks).

Comment

EDP: to buy or not to buy

*THE SPINNING WHEEL, New England Mutual Life Insurance Company, Boston, Mass.**

Part II. (The first part of this article appeared in DPD May, 1956.)

A study group charts the company's operations, compares manual and electronic costs

Having selected employees familiar with its operations, the company must first introduce them to EDP. For such groups, several computer manufacturers offer three-to-six courses in EDP fundamentals, programming and the characteristics of their own equipment.

From these courses and other studies, the team gets the feel of EDP and the operations to which it can be successfully applied. Studies of companies actually using EDP backstop the theory with practical experience.

The team is then ready to look at EDP in relation to its own company. To do this intelligently, it must first chart the operations under the present 'manual' system. (Manual, in this sense, means any system of data-processing short of EDP. Even systems based on complex punch card machines are considered manual, since the cards must be moved and the machines controlled by hand.) Functional flowcharts trace the work-steps of each of the company's mass routine operations--and a sampling of special operations--in detail from start to finish.

As it reduces the manual operations to flowcharts, the team may find many points at which the operations can be simplified, especially by eliminating duplication of work. Many of these simplifications can be put into effect immediately. Others, however, cannot be eliminated in a manual system: duplicate records are needed to coordinate the fragmented operations.

The completed flowcharts will be an accurate picture of the company's manual operations. For comparison with EDP, the team then constructs *hypothetical* flowcharts, tracing the same operations as if they were based on a single record file. It then roughs out programs for these operations and applies them to the known operating costs of a typical EDP system.

The result, compared with the cost of the manual system, will indicate the company's approximate saving in operating expenses. This saving, applied to the cost of a typical system, will show whether the initial investment can be saved back in a reasonable time.

Computer team looks for best equipment for the job, then submits entire report to management

If the answer is clearly *yes*, the team then seeks out the best combination of equipment for the specific needs of the company. The pressure on the team grows tighter: the company realizes that it can expect a reduction in operating costs once the EDP system is fully in action.

Finding-the-best is a process of trial-and-error, guided by a knowledge of machine capabilities and of what has worked in similar situations. Experimental programs are roughed out for various full-scale computers and for various combinations of small computers with special merging-sorting-collating machines. To a lesser extent, programs are also roughed out to test different combinations of input and output equipment.

When the team is convinced that it has found the combination of machines that will (1) handle the company's operations most efficiently and economically, (2) integrate most smoothly with operations not feasible for EDP, and (3) absorb increased operations easily as the company grows--then it is ready to make its recommendation to a management committee. The committee in turn makes its recommendation to top management.

The recommendation generally covers not only machines and comparative costs, but also which operations should be adapted to EDP and how the system can be introduced without interrupting the daily flow of work.

With a firm recommendation in hand, top management is able to consider the broader questions--financial aspects, effect on the managerial structure and on clerical personnel and so on--and to reach a final decision.

If the final decision is to adopt EDP, a formidable amount of preparation still lies ahead. But the spadework will have been done. Its path cleared by the advance study, EDP can be quickly harnessed to serve the company's needs.

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GENERAL INFORMATION *Continued from Page 8.*

"First large-scale computer center to open in Europe"

SYSTEMS, January–February 1956, page 10

European Univac

Remington Rand International Division of Sperry Rand Corporation will soon open a Univac computing center in Frankfurt, Germany, in new laboratories built by the Battelle Institute. The center will perform computations of all kinds on a fee basis.

"Electronics: boon...or bane?"

H. A. Warner, Hurlsley Management Institute, Baltimore
SYSTEMS AND PROCEDURES QUARTERLY, February 1956; pages 3–7.

Systems study

The systems study preceding the decision to use an electronic system, or not to use one, is beneficial no matter what the decision. If few exceptions in the routine are likely to occur, and if there is a large quantity of data and a great amount of activity dealing with that data going on frequently, an electronic system is probably justified.

Training

June 18–29, 1956
Philadelphia, Pa.

Wharton School Refresher Conference on work simplification and measurement in the office and factory. For information write to Dr. A. M. McDonough, Conference Director, University of Pennsylvania, Wharton Refresher Conference, Philadelphia 4, Pa.

June–August 1956
Cambridge, Mass.

Special Summer Program at Massachusetts Institute of Technology includes the following: June 25–July 7, Operations Research; July 30–August 11, Control Systems Engineering; August 6–11, Electronic Computers and Business Problems; August 13–18, Analog–Digital Conversion Techniques; August 13–18, Business Management and Electronic Data–Processing. For further information write: Office of the Summer Session, Room 7–103, M.I.T., Cambridge 39, Mass.

July 23–August 11
Detroit, Mich.

Wayne University computation Laboratory, Summer Program: July 23–28, "Automatic Computers–Their Application and Evaluation." July 30–August 4, "Electronic Data Processing in Business and Government." August 6–11, "Applications of Computers to Engineering, Science, and Industry." For information write to: A. W. Jacobson, Director, Computation Laboratory, Wayne University, Detroit 1, Mich.

July 25–29, 1956
Ashorne Hill, England

Production Engineering Summer School. For information, write The Institution of Production Engineers, 10 Chesterfield Street, London, W.1, England.

September 1956
Dayton, Ohio

Office Automation, evening classes at University of Dayton, tentatively set for September. For further information write: Mr. Arthur L. Holt, University of Dayton, Dayton 9, Ohio.

Training Films

The American Management Association has issued a series of four film strips titled "Using Computers in Business." The four film strips each approach electronic data processing from a slightly different point of view; yet each covers much of the same material. Possibly they should not be shown as a series to the same audience at one sitting. Part II gives an effective explanation of a computer system through the analogy of a clerk with a desk computer, superimposing upon the two systems the same flow chart of input, control, memory, processor, and output. Numerous shots of commercial equipment are included, and are used interchangeably to illustrate the various points being made. The titles and running times of the four film strips are:

Part I – Data Processing and the Computer ..... 15 min.
Part II – The Computer System ..... 22 min.
Part III – The Feasibility Study ..... 22 min.
Part IV – Business Electronics at Work ..... 16 min.

Purchase price for the group: For AMA members, $95.00; for non-members, $110.00.

Meetings

June 27–29, 1956 Houston, Texas	National Convention, N.M.A.A.; Shamrock–Hilton Hotel.
August 27–29, 1956 Los Angeles, Calif.	Annual Meeting, Association for Computing Machinery, U.C.L.A. For further information write: Association for Computing Machinery, Box 3251, Olympic Station, Beverly Hills, Calif.
September 30– October 3, 1956 New York	National Conference, Controller's Institute, Waldorf–Astoria.
October 18, 19, 1956 Los Angeles, California	Meeting of The Institute of Management Sciences, Statler Hotel.
October 22–24, 1956 Philadelphia, Pa.	International Systems Meeting, Annual Convention of the Systems and Procedures Association of America, Bellevue–Stratford Hotel. For information write to J. A. MacQueen, Alan Wood Steel Co., Conshohocken, Pa.
November 8, 9, 1956 San Francisco, Calif.	N.M.A.A. Second Annual Electronic Business Systems Conference, sponsored by the eleven Western N.M.A.A. Chapters.
November 15, 16, 1956 San Francisco, Calif.	Meeting of Operations Research Society of America, tentatively scheduled for these dates. For further information, write T. E. Oberbeck, Naval Post Graduate School, Monterey, California.
November 26–30, 1956 New York City	Third International Automation Exposition and Computer Clinic. Trade Show Building. For information, write International Automation Exposition, 845 Ridge Ave., Pittsburgh 12, Pa.
December 10–12, 1956 New York City	Eastern Joint Computer Conference, Hotel New Yorker.
February 26–28, 1957 Los Angeles, California	Western Joint Computer Conference, Statler Hotel. Theme: "Techniques for Reliability."

References

The addresses of publishers and periodicals mentioned in this issue of Data Processing Digest are listed below for your convenience in obtaining further information about the articles or books listed.

The Accountant
4 Drapers' Gardens
Throgmorton Avenue
London EC2, England

Accounting Review
American Accounting Assoc.
Col. of Commerce and Business Ad.
Ohio State University
Columbus, Ohio

American Business
4660 Ravenswood
Chicago 40, Ill.

American Management Association (AMA)
1515 Broadway, Times Square
New York, New York

Automation
Penton Building
Cleveland 13, Ohio

Automation Consultants, Inc.
1450 Broadway
New York 18, New York

Business Week
330 West 42nd St.
New York 36, New York

Computers and Automation
513 Avenue of the Americas
New York 11, New York

The Controller
Two Park Avenue
New York 16, New York

Factory Management & Maint.
330 West 42nd Street
New York 36, New York

Instruments and Automation
845 Ridge Avenue
Pittsburgh, Pa.

Journal of Industrial Engineering
225 North Avenue, N. W.
Atlanta, Georgia

Journal of Machine Accounting
4025 West Peterson Ave.
Chicago 30, Ill.

Management Methods
Management Publishing Corp.
22 West Putnam Ave.
Greenwich, Conn.

Management Science
Case Institute
Cleveland 6, Ohio

Modern Railroads
201 North Wells Street
Chicago 6, Ill.

The Office
232 Madison Avenue
New York 16, New York

Office Executive
132 West Chelten Ave.
Philadelphia 44, Pa.

Operations Research: Journal of ORSA
Mount Royal and Guilford Aves.
Baltimore 2, Md.

Railway Age
30 Church Street
New York 7, New York

Systems and Procedures Quarterly
Box 281 Wall Street Sta.
New York, New York

United States Investor
286 Congress Street
Boston 10, Mass.

John Wiley & Sons, Inc.
440 Fourth Avenue
New York 16, New York

See DPD April 1956 for a list of more than seventy periodicals regularly reviewed for significant information in the data processing and related fields.

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